

Claims

What is claimed is:

- 1 1. A rotary cathode device, comprising:
  - 2 a conducting member disposed within a rotary cathode for coupling electrical
  - 3 current from a power supply to a brush assembly, the conducting member
  - 4 being made of an electrically conductive material; and
  - 5 an electromagnetic field shield disposed between the conducting member and an
  - 6 outer surface of the rotary cathode.
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- 1 2. A rotary cathode device of claim 1 wherein the conducting member comprises a
- 2 coolant conduit.
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- 1 3. A rotary cathode device of claim 1 the electromagnetic field shield forms at least
- 2 part of a drive shaft portion of the rotary cathode.
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- 1 4. A rotary cathode device of claim 1 wherein the electromagnetic field shield
- 2 comprises electromagnetic field-permeable material.
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- 1 5. A rotary cathode device of claim 1 further comprising a drive shaft portion of the
- 2 rotary cathode, the electromagnetic field shield being disposed between the
- 3 conducting member and the drive shaft portion.

1 6. A rotary cathode device of claim 5 wherein the drive shaft portion has a bore  
2 passing there through such that the drive shaft portion includes an interior  
3 surface adjacent the bore, the electromagnetic field shield being adjacent to at  
4 least a portion of the interior surface of the drive shaft portion.

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1 7. A rotary cathode device of claim 1 further comprising a drive shaft portion of the  
2 rotary cathode which forms at least a portion of the outer surface of the rotary  
3 cathode, the electromagnetic field shield being adjacent to at least a portion of an  
4 outer surface of the drive shaft portion.

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1 8. A high-power ion sputtering magnetron having a rotary cathode device of claim 1.

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1 9. A rotary cathode device connectable to a power supply of electrical current, said  
2 rotary cathode device comprising:  
3 a coolant conduit disposed within the rotary cathode device made of an  
4 electrically conductive material for connecting the electrical current from  
5 the power supply to the rotary cathode; and  
6 a drive shaft portion made of a ferrous material for absorbing the electromagnetic  
7 field to reduce heat damage to parts adjacent to the coolant conduit that  
8 are susceptible to inductive magnetic heating.

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- 1 10. A high-power ion sputtering magnetron, comprising:
  - 2 a rotary cathode disposed upon the magnetron device, the rotary cathode
  - 3 comprising a conducting member disposed within the rotary cathode for
  - 4 coupling electrical current from a power supply to a brush assembly, the
  - 5 conducting member being made of an electrically conductive material, the
  - 6 rotary cathode further comprising an electromagnetic field shield disposed
  - 7 between the conducting member and an outer surface of the rotary
  - 8 cathode.
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- 1 11. A magnetron device of claim 10 wherein the conducting member comprises a
- 2 coolant conduit.
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- 1 12. A magnetron device of claim 10 wherein the electromagnetic field shield forms at
- 2 least part of a drive shaft portion of the rotary cathode rotatably disposed upon
- 3 the magnetron device.
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- 1 13. A magnetron device of claim 10 wherein the electromagnetic field shield
- 2 comprises electromagnetic field-permeable material.
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- 1 14. A magnetron device of claim 10 wherein the rotary cathode further comprises a
- 2 drive shaft portion of the rotary cathode, the electromagnetic field shield being
- 3 disposed between the conducting member and the drive shaft portion.

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1 15. A magnetron device of claim 14 wherein the rotary cathode drive shaft portion  
2 has a bore passing there through such that the drive shaft portion includes an  
3 interior surface adjacent the bore, the electromagnetic field shield being adjacent  
4 to at least a portion of the interior surface of the drive shaft portion.

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1 16. A magnetron device of claim 10 wherein the rotary cathode further comprises a  
2 drive shaft portion of the rotary cathode which forms at least a portion of the  
3 outer surface of the rotary cathode, the electromagnetic field shield being  
4 adjacent to at least a portion of an outer surface of the drive shaft portion.

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1 17. A high-power ion sputtering magnetron connectable to an electrical power  
2 supply, said magnetron device comprising:  
3 a rotary cathode rotatably mounted upon the magnetron device, said rotary  
4 cathode comprising a conducting member disposed within the rotary  
5 cathode, said conducting member being made of an electrically  
6 conductive material for connecting the electrical current from the power  
7 supply to the rotary cathode; and  
8 a drive shaft portion rotatably mounted to the magnetron device, said drive shaft  
9 portion being made of a ferrous material for absorbing the electromagnetic  
10 field to reduce heat damage to parts adjacent to the conducting member  
11 that are susceptible to inductive magnetic heating.